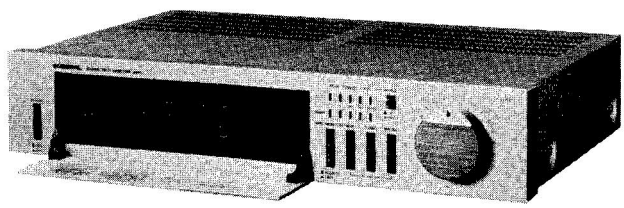
GENERAL

MODEL A800
STEREO Hi-Fi AMPLIFIER

SERVICE MANUAL



Germany : **GENERAL CORPORATION JAPAN (Euro) GmbH**
D-4000 Dusseldorf-Heerdt Werftstr 20
Tel. 0211-50 47 021 Tlx. 8588 366

Great Britain : **TELETON Electro (U.K.) Co. Ltd.**
Somerton Works. Prince Avenue.
Westcliff-on-Sea. Essex, SSO OHU
Tel. 0702 337681 Tlx. 99338

Netherlands : **GENERAL CORPORATION JAPAN (NL) B.V.**
Marconiweg 10. Vianen
Tel. 03 473-37 44 Tlx. 40 581

Distributor

Switzerland : **Allelectric AG** Gartenstr 12
5600 Lenzburg
Tel. 064 51 6951 Tlx. 68 208

France : **TELECTRODIS S. A.** 21. rue Paul-Lafargue.
94270 Le Kremlin-Bicêtre
Tel. 6 77 69 34 Tlx. 20 44 68

Spain : **HiFi Audio S. A.** Manigua 50 Barcelona-27
Tel. (93) 3400166 Tlx. 51246

Portugal : **Telvi Sociedade Electrocal LDA**
Praca de Velasques, 293-Galeria, 4003 Porto.
Tel. 497153

Malta : **C. Petroni and Sons, Ltd.** Testaferrata street, Msida.
Tel. 34874

Finland : **KESKO OY**
Rautaryhmä Satamaktu 3, SF 00161 Helsinki 16.
Tel. 1622273 Tlx. 124748

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⚠ This indication serves as a safety critical component mark.

WARNING

FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

SPECIFICATIONS

Specificasions are subject to change without notice.

ELECTRICAL PERFORMANCE

Output power at 1,000Hz 0.05% THD. (8Ω) : **40 Watts min.**

Power Bandwidth (8Ω, 1%, 20W) : **(10Hz–60KHz)**

Power Bandwidth (8Ω, 0.2%, 40W) : **(40Hz–10KHz)**

Maximum Input Signal (Input: 1,000Hz, output: 4 Watts, 0.1%, THD.)

Tuner	:	4V min.
Phono (magnetic)	:	70mV min.
AUX	:	4V min.
Tape	:	4V min.

Frequency Response (Output: 4 Watts at 1,000Hz)

Tuner/AUX/Tape	:	20Hz–50,000Hz ±1.5dB
Phono (equalizer: RIAA)	:	40Hz–20,000Hz ±1.5dB

Tone Control Characteristics (Input: AUX)

Bass	:	100Hz	±7 dB
Treble	:	10,000Hz	±7 dB
Loudness (Input: AUX 150mV, volume control: maximum gain minus 30 dB)	:	100Hz	+7dB
		10,000Hz	+2dB
High-cut filter	:	fc=4KHz	– 6 dB/oct.
Low-cut filter	:	fc=100Hz	– 6 dB/oct.

Input Sensitivity & Input Impedance (Output: 40 Watts at 1,000Hz)

Tuner	:	212mV/82KΩ
AUX	:	212mV/82KΩ
Tape	:	212mV/82KΩ
Phono	:	3.5mV max./47KΩ
Mic	:	4.2mV max./15KΩ

Minimum Volume Hum & Noise : **1.5mV max.**

Signal to Noise Ratio (Output power: DIN50mW, IEC40 W at 1,000Hz, DIN unweighted, IEC-A weighted.)

DIN	AUX/Tuner/Tape	:	50 dB min.
	Phono	:	50 dB min.
IEC	AUX/Tuner/Tape	:	70 dB min.
	Phono	:	60 dB min.

Channel Gain Difference (Volume control shall be changed from max. position to –40dB).

at 1,000Hz	:	4 dB max.
250Hz–6,300Hz	:	4 dB max.

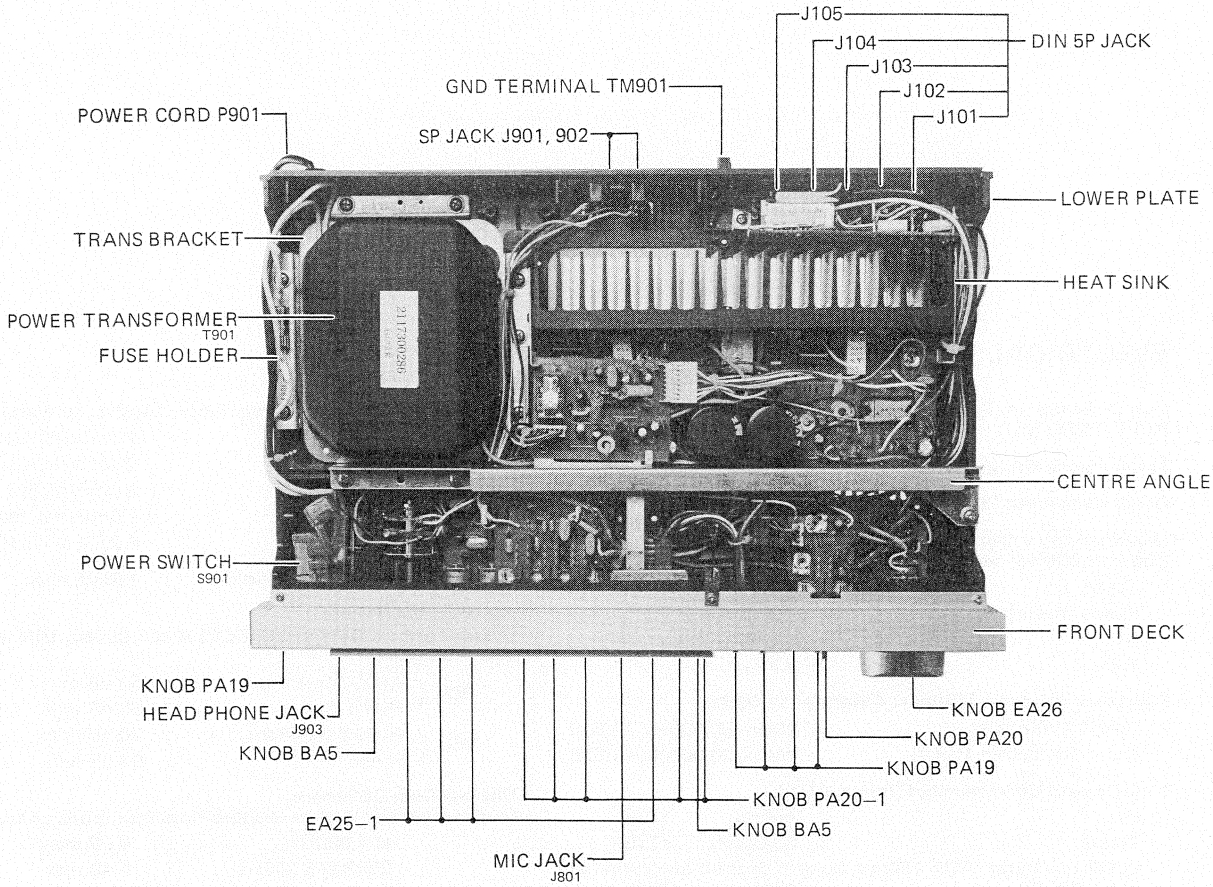
Tape Output Voltage and Output Impedance (Input: Phono 2.5mV at 1,000Hz)

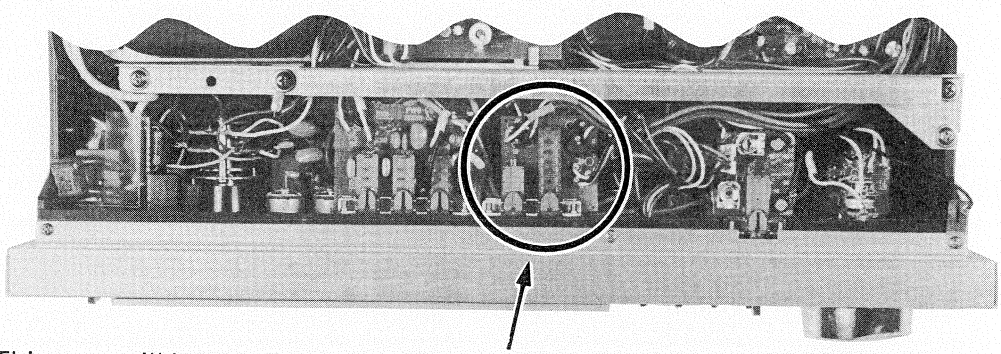
Output voltage	:	7.8mv/47kΩmin.
Output impedance	:	80KΩ ±20%

WARNING: FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER RECOMMENDED PARTS. THESE PARTS ARE IDENTIFIED BY (⚠) ON THE SCHEMATIC DIAGRAM.

The manufacturer's warranty and liabilities will be void if any unauthorized modifications, alterations or additions are made. For replacement purposes, use the same type or specified type of wire and cable, ensuring that the positioning of the wires is followed (especially for power supply circuits). Use of alternative wiring or positioning could result in damage to the set or in a shock or fire hazard.

PARTS LOCATION





This parts will be modified as shown is this figure from serial No.0060993 and on.

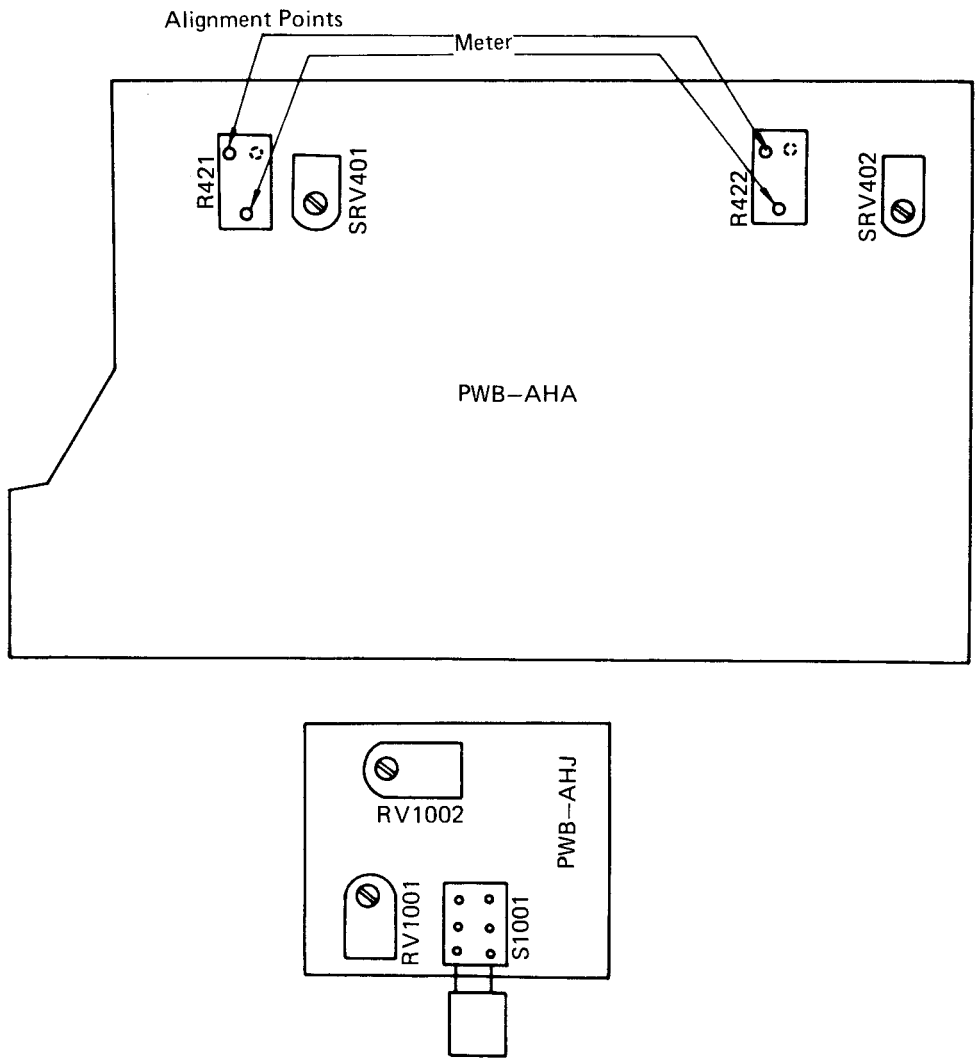
ALIGNMENT INSTRUCTIONS

1. QUIESCENT CURRENT ADJUSTMENT

Measure the voltage across the Cement Resistor (0.33Ω, 3W) of R421 for L.ch., R422 for R.ch., mounted on MA-PRA P.C.B. (PWB-AHA) under no signal condition and full counterclockwise position of volume control.
Adjust SVR401 for L.ch., and SVR402 for R.ch., to obtain 3 mV ± 1 mV with DC voltmeter.

2. INDICATOR ADJUSTMENT

Apply an input signal of 1 KHz to AUX input terminal.
Adjust volume control so as to obtain the output power of 47.5W (19.5V).
Adjust RV1001 for L.ch., and RV1002 for R.ch., (20kΩ) so as to lights the LED of 60W, when changed the Range switch to X1.



Explanation of Muting and Protection Circuit

The circuit employing IC AN7071 serves two functions namely

(1) Avoidance of electrical switching noise by muting. For this purpose the speakers will be engaged via relays with a time delay of 3 – 5 seconds after power switch operation. If the power switch is disengaged the speaker will be disconnected before the power stage is discharged.

(2) The circuit detects unusual current in the AF output stage caused for example by a short of the speaker output terminal or by excessive low impedance connection or by excessive volume setting in this case the circuit responds by disengaging the speakers thus avoiding damage to the output stage.
After the cause of over load has been eliminated function will be restored by operating the power switch to OFF and then to ON.

Characteristics of IC AN7071

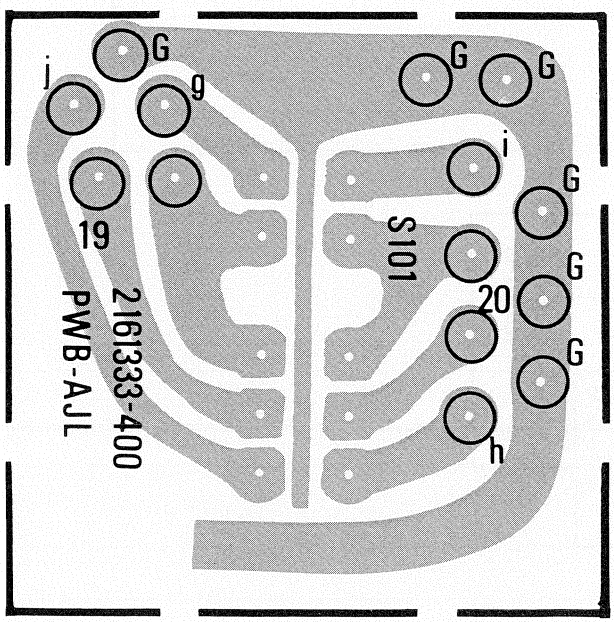
(1) The Muting time is determined by the RC combination on Pin No.5.
T=RC

(2) For power switch OFF the Muting circuit is triggered when the AC voltage on Pin No.6 drops below 0.8 – 0.6V.

(3) The Muting circuit is also triggered if on either pin 2, 3, 13 or 14 the voltage exceeds plus minus 150mV.

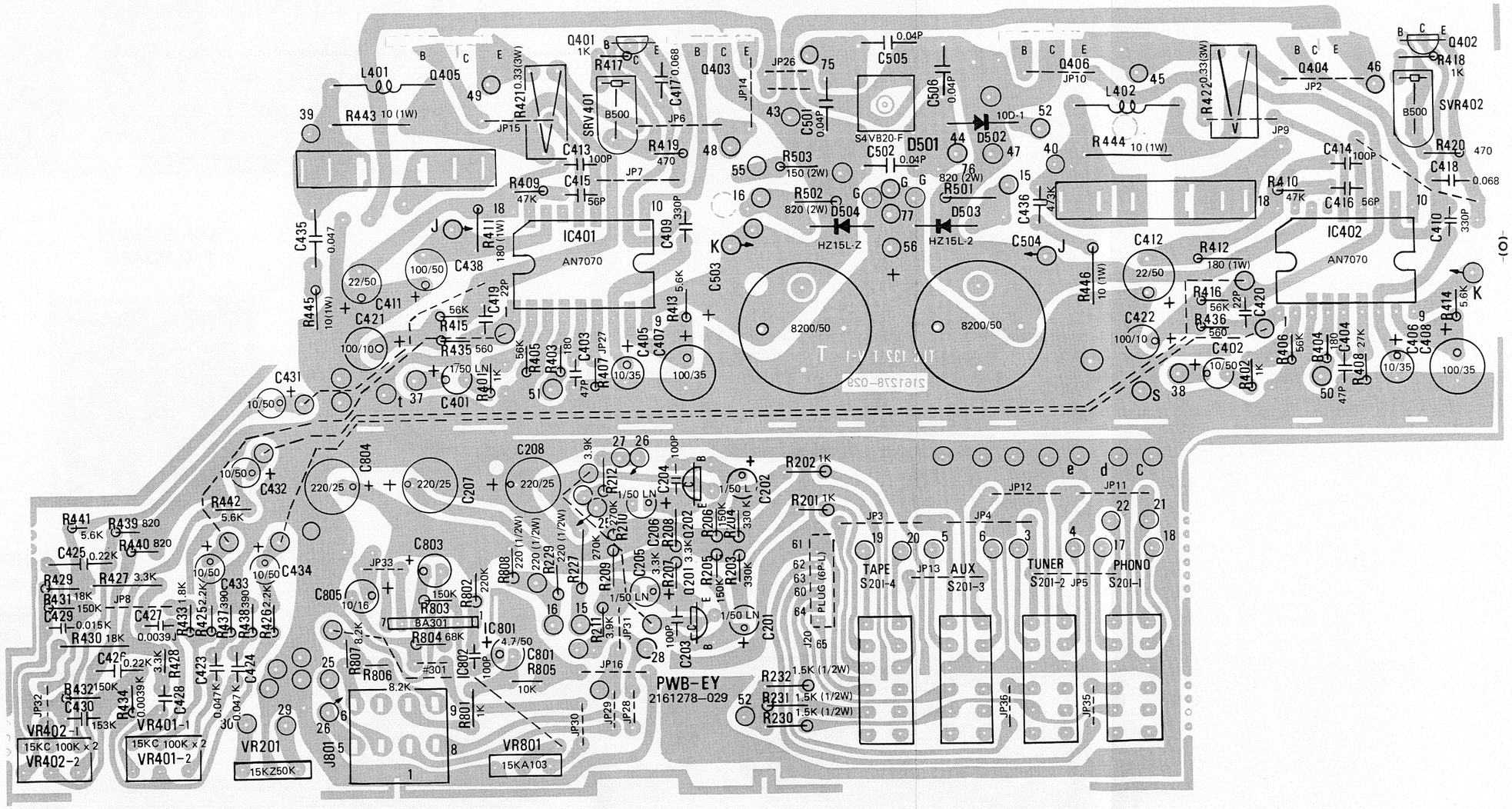
Tape P.C Board

This P.C.Board is used from serial No. 0060993 and on.
PWB AJL



PWB AJL

P. C. BOARD (1)


PWB-EY
2161278-029
IC401
AN7070
IC402
AN7070
IC801
BA301
VR401-1
15KC 100K x 2
VR401-2
VR402-1
15KC 100K x 2
VR402-2
VR201
15KZ50K
VR801
15KA103
S201-1 PHONO
S201-2 TUNER
S201-3 AUX
S201-4 TAPE
PLUG (6P-L)
L401
L402
SRV401
SVR402
D501 S4VB20-F
D502 10D-1
D503 HZ15L-2
D504 HZ15L-Z
Q401
Q402
Q403
Q404
Q405
Q406
Q201
JP1
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JP27
JP28
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JP30
JP31
JP32
JP33
J801
R443 10 (1W)
R444 10 (1W)
R445 10 (1W)
R446 10 (1W)
R501 820 (2W)
R502 820 (2W)
R503 150 (2W)
C438 100/50
C411 22/50
C412 22/50
C421 100/10
C422 100/10
C431 10/50
C432 10/50
C434 10/50
C435 0.047
C436 473K
C504
C505 0.04P
C506 0.04P
C501 0.04P
C502 0.04P
C503
C401
C402 10/50
C403
C404
C405
C406
C407
C408
C409 330P
C410 330P
C413 100P
C414 100P
C415 56P
C416 56P
C417 0.068
C418 0.068
C419 22P
C420 22P
C425 0.22K
C426 0.22K
C427 0.0039J
C428 3.3K
C429 0.015K
C430 153K
C433 390
C437 390
C438 390
C423 0.047K
C424 0.047K
C801 R805 10K
C802 100P
C803 150K
C804 220/25
C805 10/16
C207 220/25
C208 220/25
C201
C202
C203 100P
C204 100P
C205 3.3K
C206
C207
C208
R401 1K
R402 1K
R403 180
R404 180
R405 56K
R406 56K
R407 47P
R408 27K
R409 47K
R410 47K
R411 180 (1W)
R412 180 (1W)
R413 5.6K
R414 5.6K
R415 56K
R416 56K
R417 B500
R418 1K
R419 470
R420 470
R421 0.33(3W)
R422 0.33(3W)
R427 3.3K
R428 3.3K
R429 18K
R430 18K
R431 150K
R432 150K
R434 0.0039K
R435 560
R436 560
R439 820
R440 820
R441 5.6K
R442 5.6K
R423 2.2K
R424 2.2K
R425 2.2K
R426 2.2K
R801 1K
R802 220K
R803 150K
R804 68K
R806 8.2K
R807 8.2K
R808 220 (1/2W)
R209 3.9K
R210 3.9K
R211 3.9K
R212 3.9K
R227 270K
R228 270K
R229 220 (1/2W)
R230 1.5K (1/2W)
R231 1.5K (1/2W)
R232 1.5K (1/2W)
R201 1K
R202 1K
R203 330K
R204 330K
R205 150K
R206 150K
R207 3.3K
R208 3.3K
R241 1K
R242 1K
R243 1K
R244 1K
R245 1K
R246 1K
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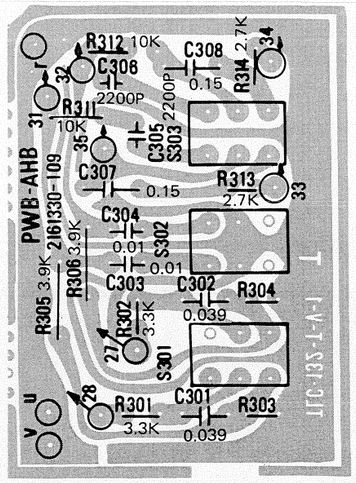
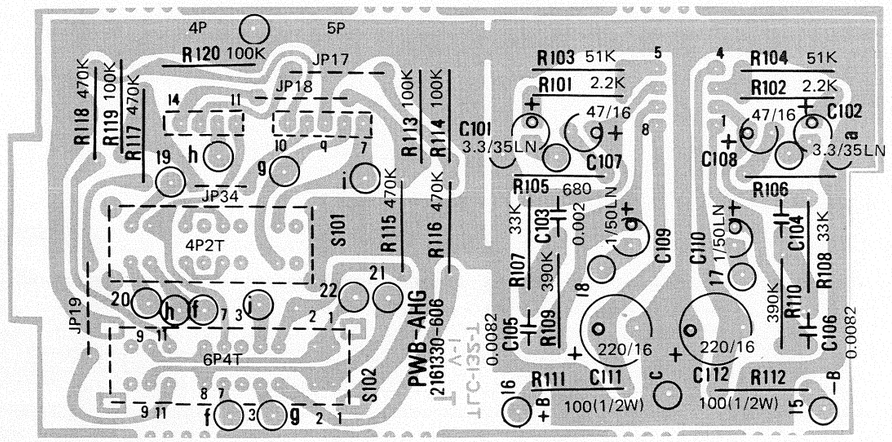
R398 1K
R399 1K
R400 1K

SWITCH P.C. BOARD

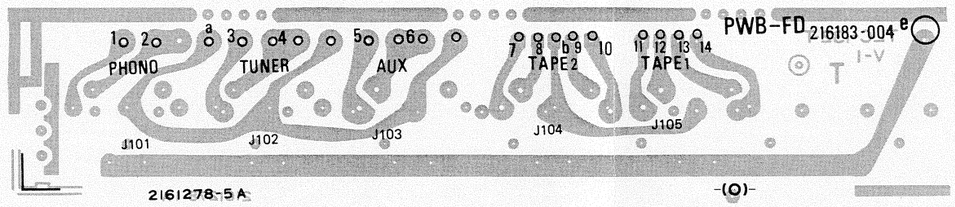


P. C. BOARD (2)

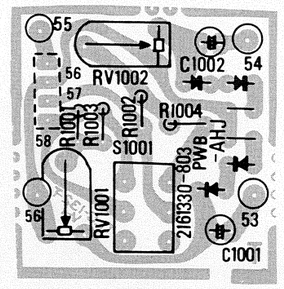
EQ P.C. BOARD



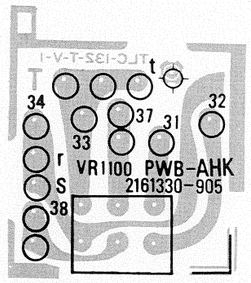
INPUT P. C. BOARD



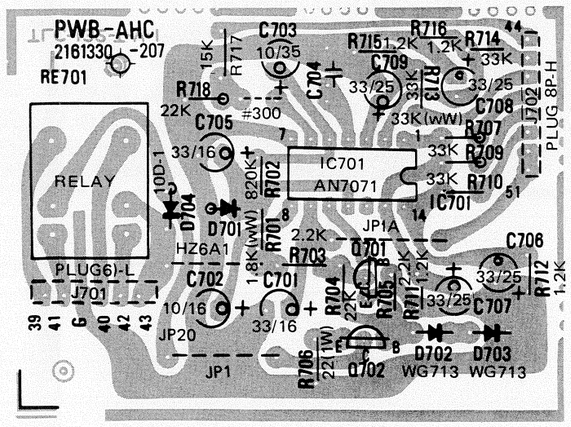
LED (RANGE)
P. C. BOARD



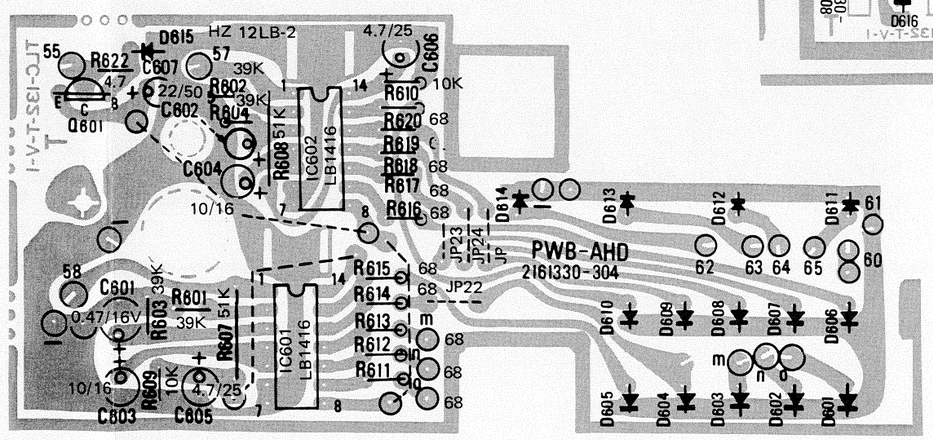
VOLUME
P. C. BOARD



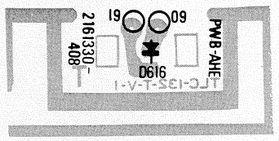
PRT. P. C. BOARD



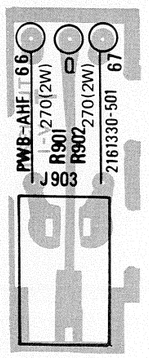
LED AMP P. C. BOARD



LED INDICATOR
P. C. BOARD



HEAD PHONE
P. C. BOARD



PARTS LIST

● : is used up to Serial No. 0060992.
○ : is used from Serial No. 0060993 and on.

Ref. No.	Part No.	Description
CABINET PART		
	2168508520	Bottom Plate
	2171001017	Panel
	2171001024	Control Panel
	2171001038	Cabinet
	2171201712	Contol Plate
	2176002533	Front Deck
	2176002546	Lower Plate
	2176002551	Side Panel-L
	2176002567	Control Box
	2176002578	Control Shaft-L
	2176002580	Control Shaft-R
	2176002595	Side Panel-R
	2186001313	Foot (Felt)
	2187100534	Knob-EA25-1
	2187100547	Knob-EA26
	2187200105	Knob-BA5
	2187300381	Knob-PA19
	2187300396	Knob-PA20
	2187300409	Knob-PA20-1
⚠ P901	2195000065	Power Cord CEN 2P
CAPACITORS		
C111	2030014059	Capacitor Electrolytic 16V 220μF-M
C112	2030014059	Capacitor Electrolytic 16V 220μF-M
C207	2030019064	Capacitor Electrolytic 25V 220μF-M
C208	2030019064	Capacitor Electrolytic 25V 220μF-M
C407	2030029105	Capacitor Electrolytic 50V 100μF-M
C408	2030029105	Capacitor Electrolytic 50V 100μF-M
C421	2030009038	Capacitor Electrolytic 10V 100μF-M
C422	2030009038	Capacitor Electrolytic 10V 100μF-M
C438	2030029105	Capacitor Electrolytic 50V 100μF-M
C503	2130034912	Capacitor-BF Electrolytic 50V 8200μF
C504	2130034912	Capacitor-BF Electrolytic 50V 8200μF
C505	2027016006	Capacitor Ceramic 100V 0.04μF-P
C506	2027016006	Capacitor Ceramic 100V 0.04μF-P
C804	2030019064	Capacitor Electroltyic 25V 220μF-M

Ref. No.	Part No.	Description
⚠ C901	2129100017	Capacitor M.Paper 250VAC 4700pF-M PME265M
⚠ C902	2129100017	Capacitor M.Paper 250VAC 4700pF-M PME265M
RESISTORS		
R111	2136200469	Resistor 1/2W 100-J Carbon
R112	2136200469	Resistor 1/2W 100-J Carbon
R227	2136200585	Resistor 1/2W 220-J Carbon
R229	2136200585	Resistor 1/2W 220-J Carbon
R230	2136200887	Resistor 1/2W 1.5K-J Carbon
R231	2136200887	Resistor 1/2W 1.5K-J Carbon
R232	2136200887	Resistor 1/2W 1.5K-J Carbon
R411	2139010456	Resistor 1W 180-J Metal Oxide
R412	2139010456	Resistor 1W 180-J Metal Oxide
R421	2141200005	Resistor 3W 0.33 Cement
R422	2141200005	Resistor 3W 0.33 Cement
R443	2139015004	Resistor 1W 10-J Metal Oxide
R444	2139015004	Resistor 1W 10-J Metal Oxide
R445	2139015004	Resistor 1W 10-J Metal Oxide
R446	2139015004	Resistor 1W 10-J Metal Oxide
R501	2139100697	Resistor 2W 820-J Metal Oxide
R502	2139100697	Resistor 2W 820-J Metal Oxide
R503	2039100420	Resistor 2W 15-J Metal Oxide
R701	2039100818	Resistor 2W 1.8K-J Metal Oxide
R706	2139010125	Resistor 1W 22-J Metal Oxide
R707	2039100902	Resistor 2W 3.3K-J Metal Oxide
R901	2139100519	Resistor 2W 270-J Metal Oxide
R902	2139100519	Resistor 2W 270-J Metal Oxide
CONTROLS		
RV1001	2142101116	Variable Resistor 20K-B Semi-fixed
RV1002	2142101116	Variable Resistor 20K-B Semi-fixed
SRV401	2142101062	Variable Resistor 500-B Semi-fixed
SRV402	2142101062	Variable Resistor 500-B Semi-fixed
VR201	2143000570	Variable Resistor 50K-Z
VR401	2143000569	Variable Resistor 100K-CX2
VR402	2143000569	Variable Resistor 100K-CX2
VR801	2134000582	Variable Resistor 10K-A
VR1100	2143000450	Variable Resistor 50K-BX2 41Detent
INDUCTORS		
L401	2114600003	Choke Coil Wire 1.06mm x 15T

Ref. No	Part No.	Description
L402	2114600003	Choke Coil Wire 1.0 6MMX15T
RE701	2151400004	Relay DC24V3A
⚠ T901	2117300286	Power Transformer 220V Class-2
SEMICONDUCTORS		
D501	2109200124	SI-Rectifier S4VB20
D502	2109100008	SI-Rectifier 10D-1
D503	2108200319	Zener-Diode HZ15L-2
D504	2108200319	Zener-Diode HZ15L-2
D601	2108200267	Zener-Diode HZ12LB-2
D601	2111300305	LED V312 Green
D602	2111300305	LED V312 Green
D603	2111300305	LED V312 Green
D604	2111300305	LED V312 Green
D605	2111300305	LED V312 Green
D606	2111300305	LED V312 Green
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D613	2111300305	LED V312 Green
D614	2111300305	LED V312 Green
D615	2111300305	LED V312 Green
D701	2108200301	Zener-Diode HZ6A1
D702	2008010188	Diode-SI WG713
D703	2008010188	Diode-SI WG713
D704	2109100008	SI-Rectifier 10D-1
IC101	2102400196	IC NJM4558D-A
or	2102400203	NJM4559D
IC401	2102400294	IC AN7070
IC402	2102400294	IC AN7070
IC601	2102000017	IC LB1416
IC602	2102000017	IC LB1416
IC701	2102400300	IC AN7071
IC801	2102400289	IC BA301
Q201	2104000522	Transistor 2SA970BL
Q202	2104000522	Transistor 2SA970BL
Q401	2103100746	Transistor 2SC1815-BL
Q402	2103100746	Transistor 2SC1815-BL
Q403	2104500565	Transistor 2SD718-R
Q403	2104500576	Transistor 2SD718-O
Q404	2104500565	Transistor 2SD718-R
Q404	2104500476	Transistor 2SD718-O
Q405	2104300427	Transistor 2SB688-R
Q405	2104300431	Transistor 2SB688-O
Q406	2104300427	Transistor 2SB688-R
Q406	2104300431	Transistor 2SB688-O
Q601	2104500615	Transistor 2SD880Y-LB-102
Q601	2104500622	Transistor 2SD880GR-LB-102

Ref. No.	Part No.	Description
Q701	2103100370	Transistor 2SC1571F
Q702	2103100746	Transistor 2SC1815-BL
Q702	2104500261	Transistor 2SD438E
Q702	2104500272	Transistor 2SD438F
MISCELLANEOUS		
	2107900012	Bushing
•S101	2148900238	Flexible Switch Wire L-389
	2149100262	Terminal-B (Ground) W/Screw
	2149200103	Fuse-semco T2.0A 250V
	2168101281	VR Shield Plate
	2174100869	Control Spring-L
	2174100870	Control Spring-R
	2174200265	Earth Spring
	2176602601	Push Knob Guide-1
	2176602619	Push Knob Guide 4-A
	2176602643	LED Cover
⚠ F901	2147200007	Fuse-SEMKO T2.0A 250V
J101	2149301067	DIN Jack 5P
J102	2149301067	DIN Jack 5P
J103	2149301067	DIN Jack 5P
J104	2149301067	DIN Jack 5P
J105	2149301067	DIN Jack 5P
J201	2049601047	Plug 6P-L
J701	2049601047	Pulg 6P-L
J702	2149600336	Plug 8P-H
J801	2149301095	Headphone Jack
J901	2149300328	SP Jack
J902	2149300328	SP Jack
J903	2149301078	Headphone Jack
J1001	2049601020	Plug 4P-E PCB
P SW	2186100555	Switch Cover
•S101	2148900224	Flexible Switch (Operater)
•S101	2148900241	Flexible Switch-Main 4P2T
oS101	2148200732	Push Switch
S102	2148900256	Remote Switch (Operater)
S102	2148900262	Remote Switch-Main 6P4T
S201	2148200559	Push Switch 4 Gang
S301	2148200565	Push Switch 3 Gang
S902	2148000099	Rotary Switch 2-4P2T
⚠ S901	2148200485	Push Switch Class-2
S1001	2148200576	Push Switch
CHASSIS		
	2168101247	Heat Sink
	2168101302	Heat Sink-D
	2168508361	Center Angle
	2168508384	Trans. Bracket
	2168508402	PCB Holder-PRT
	2168508427	PCB Holder-EQ
	2182400062	Cord Clamp

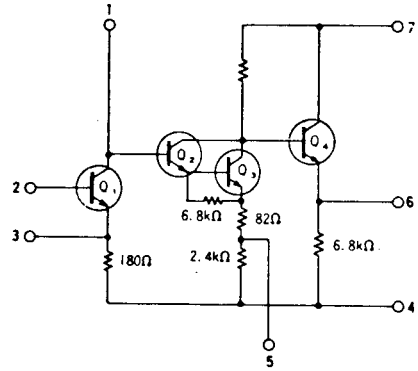
Ref. No.	Part No.	Description
	2161283004	P.C.Board-FD (EY-FJ) (Input)
	2161282006	P.C.Board-FC (EY-FJ) (EQ)
	2161285005	P.C.Board-FG (EY-FJ) (H.P)
	2161280002	P.C.Board-FA (EY-FJ) (LED AMP)
	2161288009	P.C.Board-FJ (EY-FI) (VR))
	2176601404	Bush (for LED P.C.B.)
	2161286008	P.C.Board-FH (EY-FJ) (LED-IND)
	2161279005	P.C.Board-EZ (EY-FJ) (PRT)
	2161281007	P.C.Board-FB (EY-FJ) (SW)
	2161284001	P.C.Board-FE (EY-FJ) (LED RANGE)
	2161278019	P.C.Board-EY (EZ-FT) (MA-PRA)
o	2161333400	P.C.Board-AJL (TAPE)
MECHANISM		
	2174200167	Spring (Earth)
COMPLETE MODULES AND ASSY		
	2852000691	P.C.Board Assy (MA-PRA)
	2852000706	P.C.Board Assy (Switch)
	2852000721	P.C.Board Assy (PRT)
	2852000735	P.C.Board Assy (EQ)
	2852000748	P.C.Board Assy (INP)
	2852000770	P.C.Board Assy (AMP, LED)
	2859000672	P.C.Board Assy (SW-Range)

Ref. No.	Part No.	Description

INTERNAL CONNECTION OF IC'S

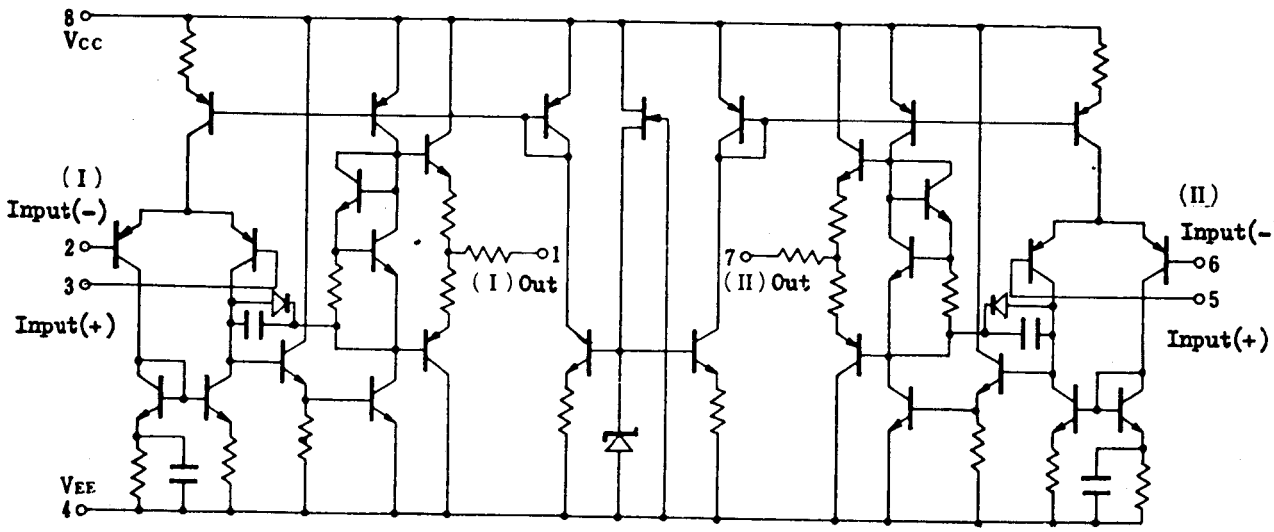
BA301

Equivalent Circuit



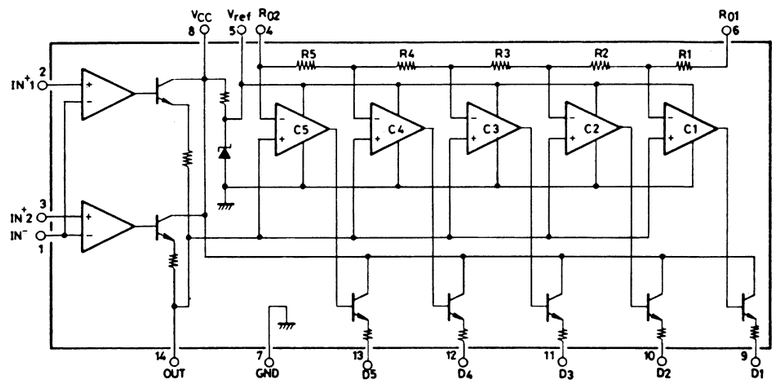
NJM4558

Equivalent Circuit



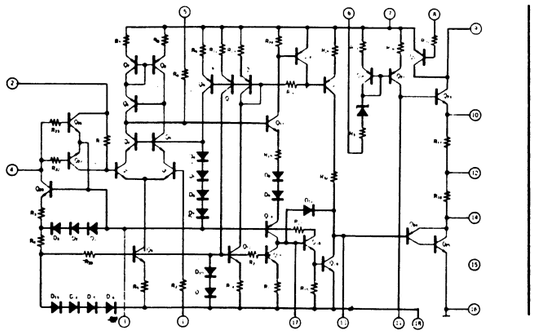
LB1416

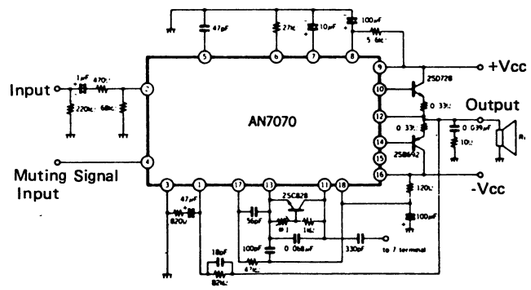
Monolithic Digital IC
Bar indicator by 5 LED's (Green, Red)
Equivalent Circuit Block Diagram



AN7070

Audio Power Amp. Driver
AN7070 (Package I–25, 18–Lead Plastic Power DIL)

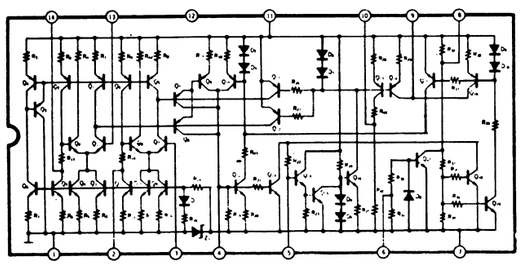




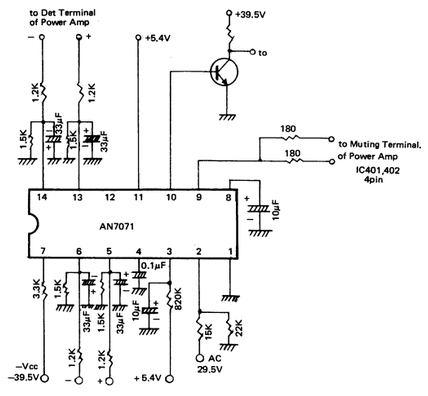
Reference circuit

AN7072

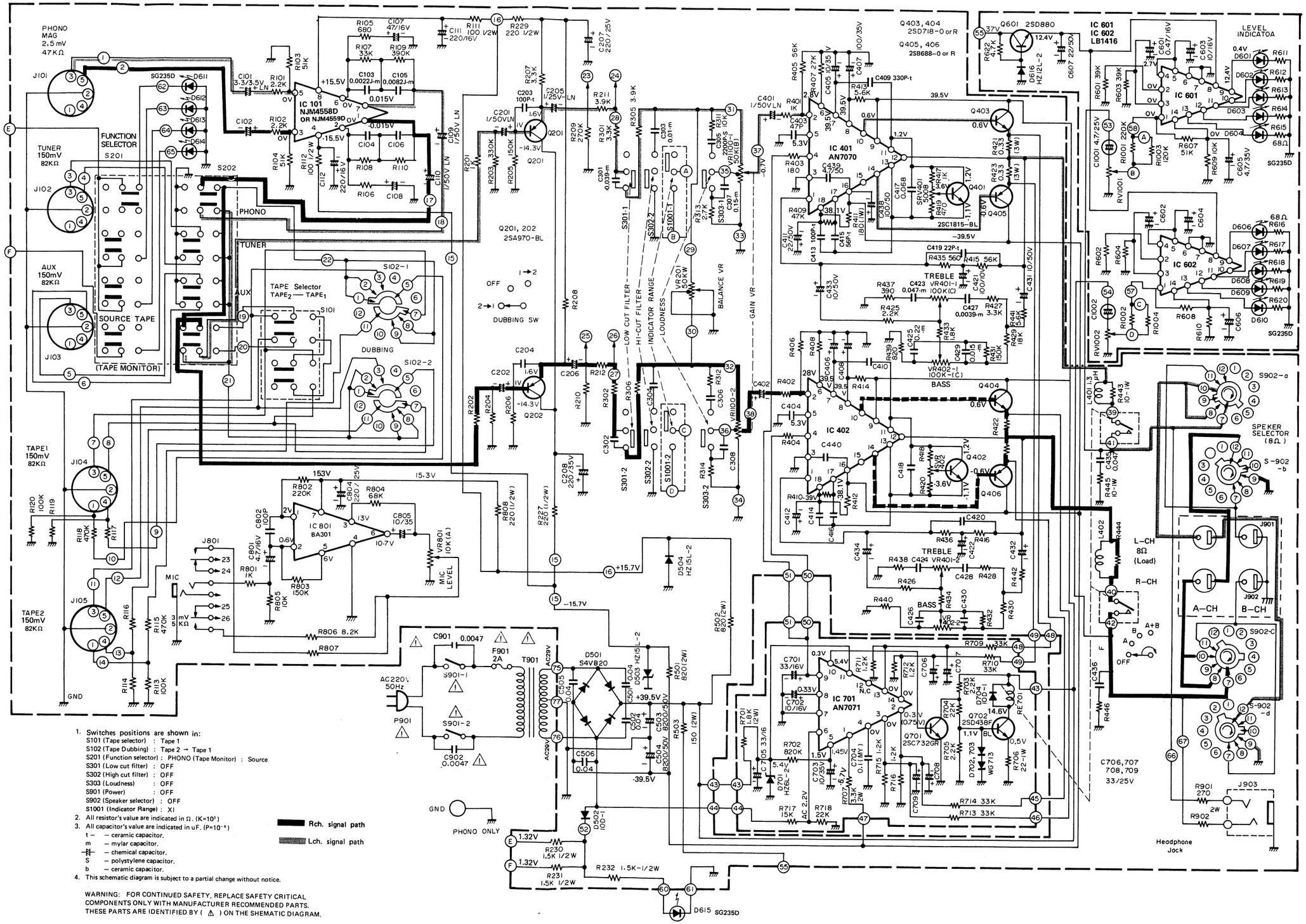
Power Amp. Control Circuit, Protection Circuit
AN7071 (Package I–16, 14–Lead Plastic DIL)



Reference circuit



A800 CIUCUIT DIAGRAM



1. Switches positions are shown in:
   S101 (Tape selector) : Tape 1
   S102 (Tape Dubbing) : Tape 2 → Tape 1
   S201 (Function selector) : PHONO (Tape Monitor) : Source
   S301 (Low cut filter) : OFF
   S302 (High cut filter) : OFF
   S303 (Loudness) : OFF
   S901 (Power) : OFF
   S902 (Speaker selector) : OFF
   S1001 (Indicator Range) : XI
2. All resistor's value are indicated in Ω. (K=10^3)
3. All capacitor's value are indicated in uF. (P=10^{-6})
   t — — ceramic capacitor.
   m — mylar capacitor.
   ⊣⊢ — chemical capacitor.
   S — polystylene capacitor.
   b — ceramic capacitor.
4. This schematic diagram is subject to a partial change without notice.

WARNING: FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER RECOMMENDED PARTS. THESE PARTS ARE IDENTIFIED BY (⚠) ON THE SHEMATIC DIAGRAM.